UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/134,478	08/14/1998	TAKAFUMI NOGUCHI	2091-0162P	8041

2292 7590 09/03/2003

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER
ROSENDALE, MATTHEW L

ART UNIT	PAPER NUMBER
2612	//

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/134,478	NOGUCHI, TAKAFUMI	
	Examiner	Art Unit	
	Matthew L Rosendale	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/13/03* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,8,9,12,13 and 16-19* is/are rejected.

7)☒ Claim(s) *3,4,6,7,10,11,14 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

Applicant's arguments regarding claims 1 – 19, filed 6/13/03 have been fully considered but they are not persuasive.

The applicant argues on page 4 of the amendment that Van de Poel fails to teach or suggest making an adjustment to the pixel value based on the rate of pixels having a maximum brightness as set forth in claims 1 and 17, and computing a histogram of the brightness as set forth in claims 9, 13, 18, and 19. The applicant further sites the disclosure of Van de Poel pointing out that the brightness histogram of Fig. 3 only shows one color channel and is used to detect the presence of spectral reflections (see Van de Poel, col. 13, lines 34 – 42).

However, the examiner points to the following series of paragraphs disclosed by Van de Poel showing the alternative embodiment cited by the examiner in the previous office action showing brightness being defined by 3 mutually independent color components being red, green, and blue (see Van de Poel, col. 13, lines 43 – 55). According to Van de Poel, spectral reflections are the brightest points in an image (see Van de Poel col. 1, lines 18 – 41). The maximum brightness or range of pixels containing spectral reflections is defined as pixels having a maximum white color falling in the range of X1 and X2 where X1 is defined by 3 mutually independent color components X1r, X1g, and X1b and X2 is defined by 3 mutually independent color components X2r, X2g, and X2b. Van de Poel determines that the pixels having the maximum brightness contain spectral reflections (see Van de Poel, col. 3, lines 48 – 61) and the rate of pixels containing spectral reflections is defined by the cumulative density of pixels falling

in the range of X1 and X2 shown in figure 3. Therefore Van de Poel does determine a rate of pixels having a maximum brightness as broadly claimed by the applicant.

The examiner agrees that the inventions disclosed by Van de Poel and by the applicant may be different or directed to solving a different problem. However, as currently drafted, the applicant's claims are written broadly enough to be met by the disclosure of Van de Poel. Therefore the rejections of claims 1 – 19 are maintained.

Response to Amendment

Regarding the applicant's amendments to claims 1, 17, and 19, the rejection under 35 U.S.C. 112 1st paragraph has been withdrawn.

1. Claims 1, 2, 5, 8, 9, 12, 13, and 16 – 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Van de Poel et al.

Referring to claim 1, Van de Poel discloses a method of adjusting the brightness of an image comprising, acquiring image data and expressing each pixel value as a set of three mutually independent components and defining the brightness of each pixel based on the three components and determining a rate of pixels based on a number of pixels having a maximum brightness among all pixels and making an adjustment to the digital camera based on said rate. Van de Poel discloses a three-chip CCD configuration where each CCD had its own color filter designed to capture red, green, or blue object light (Col. 5, Lines 29 – 43). Figure 3 of Van de Poel shows a cumulative histogram plotting the density frequency of the brightness of each pixel.

The region $X_1 - X_2$ shows pixels having a maximum brightness. If the rate of pixels in the region $X_1 - X_2$ exceeds a predetermined rate such that the following equation is satisfied:

$$\alpha = X_{max} - X_1 / X_{max} - X_2 \text{ and } \alpha <= .875$$

Then the image is determined to be over exposed and the user can make an adjustment to the digital camera so that the image may be re-photographed properly exposed (Col. 9, Line 46 – Col. 11, Line 27 and Col. 13, Lines 43 - 55).

2. Referring to claim 2, Van de Poel discloses an image acquisition device being a digital camera 21 in figure 1 and the adjustment to image acquisition device is an exposure value at the time of photography by the digital camera. Figure 3 of Van de Poel shows a cumulative histogram plotting the density frequency of the brightness of each pixel. The region $X_1 - X_2$ shows pixels having a maximum brightness. If the rate of pixels in the region $X_1 - X_2$ exceeds a predetermined rate such that the following equation is satisfied:

$$\alpha = X_{max} - X_1 / X_{max} - X_2 \text{ and } \alpha <= .875$$

Then the image is determined to be over exposed and the user can make an adjustment to the digital camera so that the image may be re-photographed properly exposed (Col. 9, Line 46 – Col. 11, Line 27 and Col. 13, Lines 43 - 55).

3. Referring to claim 5, Van de Poel discloses an image acquisition device being a digital camera 21 in figure 1 and the adjustment to the pixel values of the image is a data transformation process of transforming the acquired digital image data. Instead of the user making an adjustment to correct the exposure of an image, the image data may be corrected after being

captured based on the cumulative histogram shown in figure 4 where the region $X_1 - X_2$ shows pixels having a maximum brightness and the cumulative densities are remapped such that the following condition is satisfied:

$$X_S = X1, X_B = X2, X_E = X_{MAX}$$

$$X'_S, X'_B, X'_E \text{ are corrected values of } X_S, X_B, X_E$$

$$X'_S = 0, X'_B = \alpha, X'_E = X_{MAX} \text{ wherein } \alpha \text{ is in the range of [60\% to 95\%]}$$

(Col. 11, Line 65 – Col. 13, Line 5 and Col. 13, Lines 43 - 55).

4. Referring to claim 8, Van de Poel defines brightness for an image having red, green, and blue color components to be the maximum brightness for the red, green, and blue signals at each pixel location Col. 13, Lines 43 – 55).

5. Referring to claim 9, Van de Poel discloses a digital camera 21 in figure 1 comprising an image pickup means 26 for capturing an image and expressing it in a set of three mutually independent RGB components, a brightness analyzing means for computing a histogram of the brightness of the pixel defined based on the three components for the image data acquired by the image pickup means and an exposure control means for making an adjustment to an exposure value at the time of photography on the basis of the histogram so that a rate of pixels based on a number of pixels having a maximum brightness among all pixels becomes a predetermined rate. Figure 3 of Van de Poel shows a cumulative histogram plotting the density frequency of the brightness of each pixel. The region $X_1 - X_2$ shows pixels having a maximum brightness. If the

rate of pixels in the region X_1- X_2 exceeds a predetermined rate such that the following equation is satisfied:

$$\alpha = X_{max} - X_1 / X_{max} - X_2 \text{ and } \alpha <= .875$$

Then the image is determined to be over exposed and the user can make an adjustment to the digital camera so that the image may be re-photographed properly exposed (Col. 9, Line 46 – Col. 11, Line 27 and Col. 13, Lines 43 - 55).

6. Referring to claim 12, Van de Poel defines brightness for an image having red, green, and blue color components to be the maximum brightness for the red, green, and blue signals at each pixel location Col. 13, Lines 43 – 55).

7. Referring to claim 13, Van de Poel discloses an image processor comprising a digital camera 21 in figure 1 for capturing an image expressed as three mutually exclusive RGB components (Col. 5, Lines 29 – 43), brightness analyzing means for computing a histogram of the brightness for the pixel defined based on the three components for the digital data acquired by the data acquisition means, and a data transforming means for performing a data transformation process on the acquired digital data on the basis of the histogram so that a rate of pixel based on a number of pixels having a maximum brightness among all pixels is made a predetermined rate. Instead of the user making an adjustment to correct the exposure of an image, the image data may be corrected after being captured based on the cumulative histogram shown in figure 4 where the region $X_1 – X_2$ shows pixels having a maximum brightness and the cumulative densities are remapped such that the following condition is satisfied:

$$X_S = X1, X_B = X2, X_E = X_{MAX}$$

$$X'_S, X'_B, X'_E \text{ are corrected values of } X_S, X_B, X_E$$

$$X'_S = 0, X'_B = \alpha, X'_E = X_{MAX} \text{ wherein } \alpha \text{ is in the range of [60\% to 95\%]}$$

(Col. 11, Line 65 – Col. 13, Line 5 and Col. 13, Lines 43 - 55).

8. Referring to claim 16, Van de Poel defines brightness for an image having red, green, and blue color components to be the maximum brightness for the red, green, and blue signals at each pixel location Col. 13, Lines 43 – 55).

9. Referring to claim 17, Van de Poel discloses a method of adjusting the brightness of an image comprising, acquiring image data and expressing each pixel value as chrominance RGB values (Col. 5, Lines 29 – 43), defining the brightness of each pixel based on the chrominance RGB values, and determining a rate of pixels based on a number of pixels having a maximum brightness among all pixels and making an adjustment to the digital camera. Figure 3 of Van de Poel shows a cumulative histogram plotting the density frequency of the brightness of each pixel. The region $X_1 – X_2$ shows pixels having a maximum brightness. If the rate of pixels in the region $X_1 - X_2$ exceeds a predetermined rate such that the following equation is satisfied:

$$\alpha = X_{max} – X_1 / X_{max} – X_2 \text{ and } \alpha <= .875$$

Then the image is determined to be over exposed and the user can make an adjustment to the digital camera so that the image may be re-photographed properly exposed (Col. 9, Line 46 – Col. 11, Line 27 and Col. 13, Lines 43 - 55).

10. Referring to claim 18, Van de Poel discloses a digital camera 21 in figure 1 comprising an image pickup means 26 for capturing an image and expressing it as chrominance RGB values (Col. 5, Lines 29 – 43), a brightness analyzing means for computing a histogram of the brightness of the pixel defined based on the chrominance RGB values for the image data acquired by the image pickup means and an exposure control means for making an adjustment to an exposure value at the time of photography on the basis of the histogram so that a rate of pixels based on a number of pixels having a maximum brightness among all pixels becomes a predetermined rate. Figure 3 of Van de Poel shows a cumulative histogram plotting the density frequency of the brightness of each pixel. The region $X_1 - X_2$ shows pixels having a maximum brightness. If the rate of pixels in the region X_1- X_2 exceeds a predetermined rate such that the following equation is satisfied:

$$\alpha = X_{max} - X_1 \,/\, X_{max} - X_2 \text{ and } \alpha <= .875$$

Then the image is determined to be over exposed and the user can make an adjustment to the digital camera so that the image may be re-photographed properly exposed (Col. 9, Line 46 – Col. 11, Line 27 and Col. 13, Lines 43 - 55).

11. Referring to claim 19, Van de Poel discloses an image processor comprising a digital camera 21 in figure 1 for capturing an image expressed as chrominance RGB values (Col. 5, Lines 29 – 43), brightness analyzing means for computing a histogram of the brightness for the pixel defined based on the chrominance RGB values for the digital data acquired by the data acquisition means, and a data transforming means for performing a data transformation process on the acquired digital data on the basis of the histogram so that a rate of pixel based on a

number of pixels having a maximum brightness among all pixels is made a predetermined rate. Instead of the user making an adjustment to correct the exposure of an image, the image data may be corrected after being captured based on the cumulative histogram shown in figure 4 where the region $X_1 - X_2$ shows pixels having a maximum brightness and the cumulative densities are remapped such that the following condition is satisfied:

$$X_S = X1, X_B = X2, X_E = X_{MAX}$$

$$X'_S, X'_B, X'_E \text{ are corrected values of } X_S, X_B, X_E$$

$$X'_S = 0, X'_B = \alpha, X'_E = X_{MAX} \text{ wherein } \alpha \text{ is in the range of [60\% to 95\%]}$$

(Col. 11, Line 65 – Col. 13, Line 5 and Col. 13, Lines 43 – 55)).

Claim Objections

Claims 3, 4, 6, 7, 10, 11, 14, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Referring to claims 3, 6, 10, and 14, the prior art fails to teach or suggest performing the image transformation process based on the following equation:

$$(R' G' B') = k(R G B)$$

Where k is a constant determined by the rate of pixels having a maximum brightness among all pixels.

Referring to claims 4, 7, 11, and 15, the prior art fails to teach or suggest performing the image transformation process based on the following equation:

$$(R' G' B') = (R G B) + (k k k)$$

Where k is a constant determined by the rate of pixels having a maximum brightness among all pixels.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hung discloses a histogram in figure 6 showing a rate of pixels having a maximum brightness.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew L Rosendale whose telephone number is (703) 305-4909. The examiner can normally be reached on Monday - Friday 8: 00am-4: 00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to customer service whose telephone number is (703) 306-0377.

MLR
August 21, 2003